End-to-End & Performance Verification

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Briefing Overview

- **Objective**
- **Scope**
- **Test Conduct**
- **EDC Test Results**
- **GSFC Test Results**
- **Summary**

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Objective

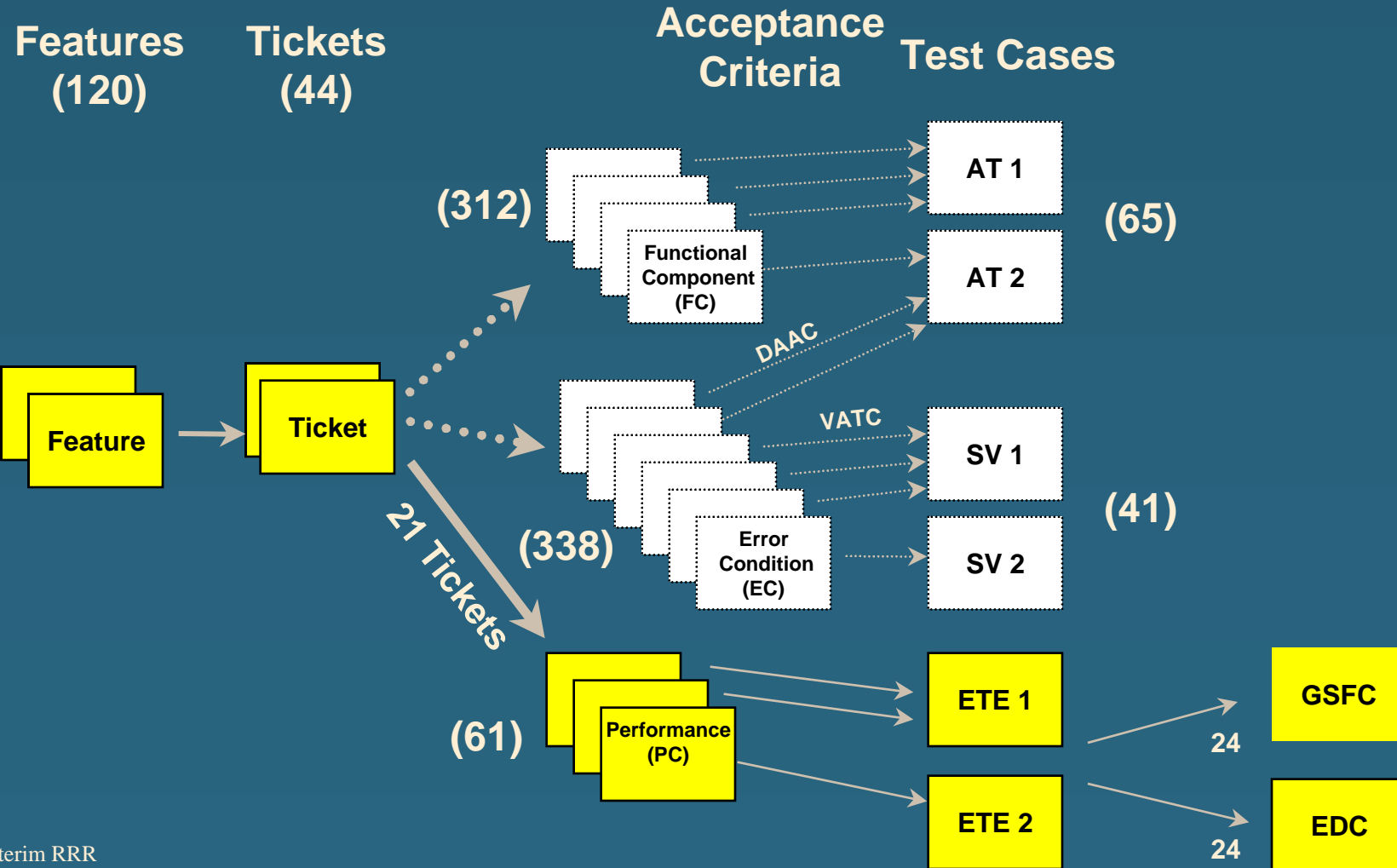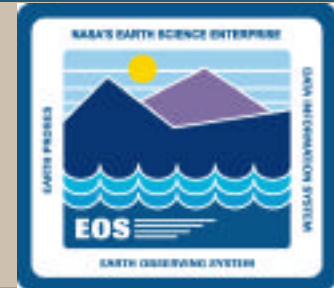**Objective: Show ability to achieve 24 hours of operation in at most 24 hours.**

- **Normal production scenarios verify ECS can sustain processing of science data** that would normally be received from all external entities within a 24-hour period.

- **Verify performance criteria** specified in the Feature Tickets while running End-to-End Scenarios.

- Use **operational hardware and software** to verify End-to-End Criteria.

- Perform **L-7** ingest, archive, acquire, and distribution.

- Perform **ASTER and MODIS** ingest, production and distribution.

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ETE Test Conduct

- **All procedures were approved by ESDIS prior to formal testing.**

- **Testing was documented using established procedures.**

- **Tests were witnessed by ESDIS representatives and IV&V.**

- **Formal ETE Testing at EDC occurred on January 29 and 30, 1999**

- **Formal ETE Testing at GSFC occurred on February 11 and 12, 1999**

Verification Approach

Features
(120)

Tickets
(44)

Acceptance
Criteria

Test Cases

Feature → Ticket

(312)

Functional
Component
(FC)

AT 1

AT 2

(65)

DAAC

VATC

21 Tickets

(338)

Error
Condition
(EC)

SV 1

SV 2

(41)

(61)

Performance
(PC)

ETE 1

ETE 2

GSFC

EDC

24

24

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TEST Criteria for EDC

- **Meet ingest, processing, and output volume**
    - Ingest full day of LANDSAT data (140GB/ 333 scenes)
    - Ingest ASTER L1A (777 Granules)
    - Ingest and process full day of ASTER L1B (310 Granules)
    - Distribute LANDSAT daily load (50 GB/100 scenes)
    - Distribute 30% of ASTER daily production (55 GB)

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TEST Criteria for GDAAC

- **Meet ingest, processing, and output volume**
  - **Ingest ASTER Expedited (2 Granules - 0.5 GB)**
  - **Ingest full day of MODIS L0 (12 Granules - 78 GB)**
  - **Process full day of DPREP (Orbit and Attitude)**
  - **Process full day of MODIS L1A into L1B and Cloud Mask (576 Granules - 236 GB)**
  - **Distribute 60% of MODIS daily production (135 GB)**

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Test Criteria (cont.)

- **Ensure connectivity of threads-ingest, processing, search and order, and distribution**
  - **For EDC** : LANDSAT ingest, archive, acquire, subsetting, reformatting and distribution
  - **For GSFC** : MODIS daily L1A, L1B and Cloud Mask production
- **Concurrent Processes**
  - ingest, processing, subsetting, search and order and distribution throughout test

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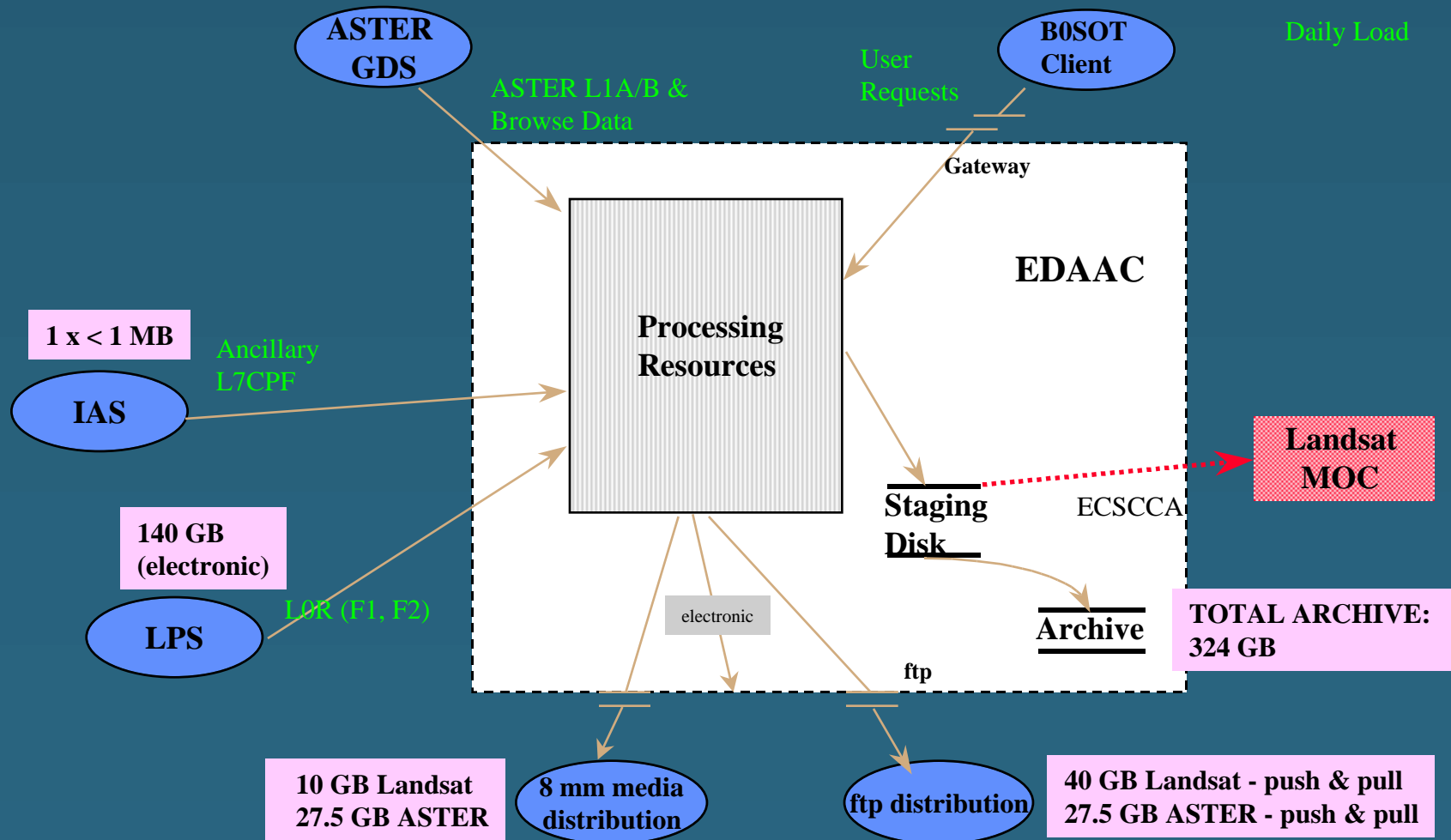Raytheon

Test Criteria (cont.)

- **Demonstrates key operations functionality**
  - **System startup, shutdown and cleanup**
  - **Fault recovery**
  - **System backup**
  - **System Monitoring (HP OpenView)**
- **Demonstrate multi-mode capabilities (executed twice during ETE)**
  - **Significant SSI&T processing**
  - **Non-synchronized startup and shutdown across modes**
- **Use real PGEs**
  - **ASTER and MODIS (version 2.1)**

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EDC End to End Scenario Context Diagram

ASTER GDS

ASTER L1A/B & Browse Data

User Requests

B0SOT Client

Daily Load

Gateway

EDAAC

1 x < 1 MB

Ancillary L7CPF

IAS

Processing Resources

Landsat MOC

Staging Disk

ECSCCA

140 GB (electronic)

L0R (F1, F2)

LPS

electronic

Archive

TOTAL ARCHIVE: 324 GB

ftp

10 GB Landsat 27.5 GB ASTER

8 mm media distribution

ftp distribution

40 GB Landsat - push & pull 27.5 GB ASTER - push & pull

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ASTER PGE Performance vs. Technical Baseline
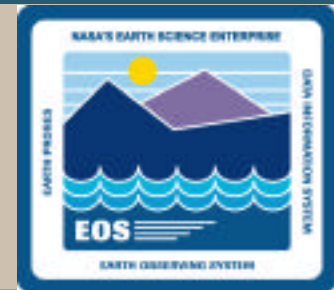
PGE	# in Test	Feb 96 Tech Baseline			Oct 98 measurements		
		PGE Exec time (mins)	Total Time (mins)	# CPUs	PGE Exec time (mins)	Total Time (mins)	# CPUs
DST	310	4	1,117	0.776	20.9	6,474	4.496
BTS	5	0	2	0.001	0.2	1	0.001
ACT	5	3	16	0.011	1.2	7	0.005
ETS	5	0	2	0.002	0.5	3	0.002
				0.789			4.504

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ASTER Transfer Rates Much Lower Than Expected at EDC
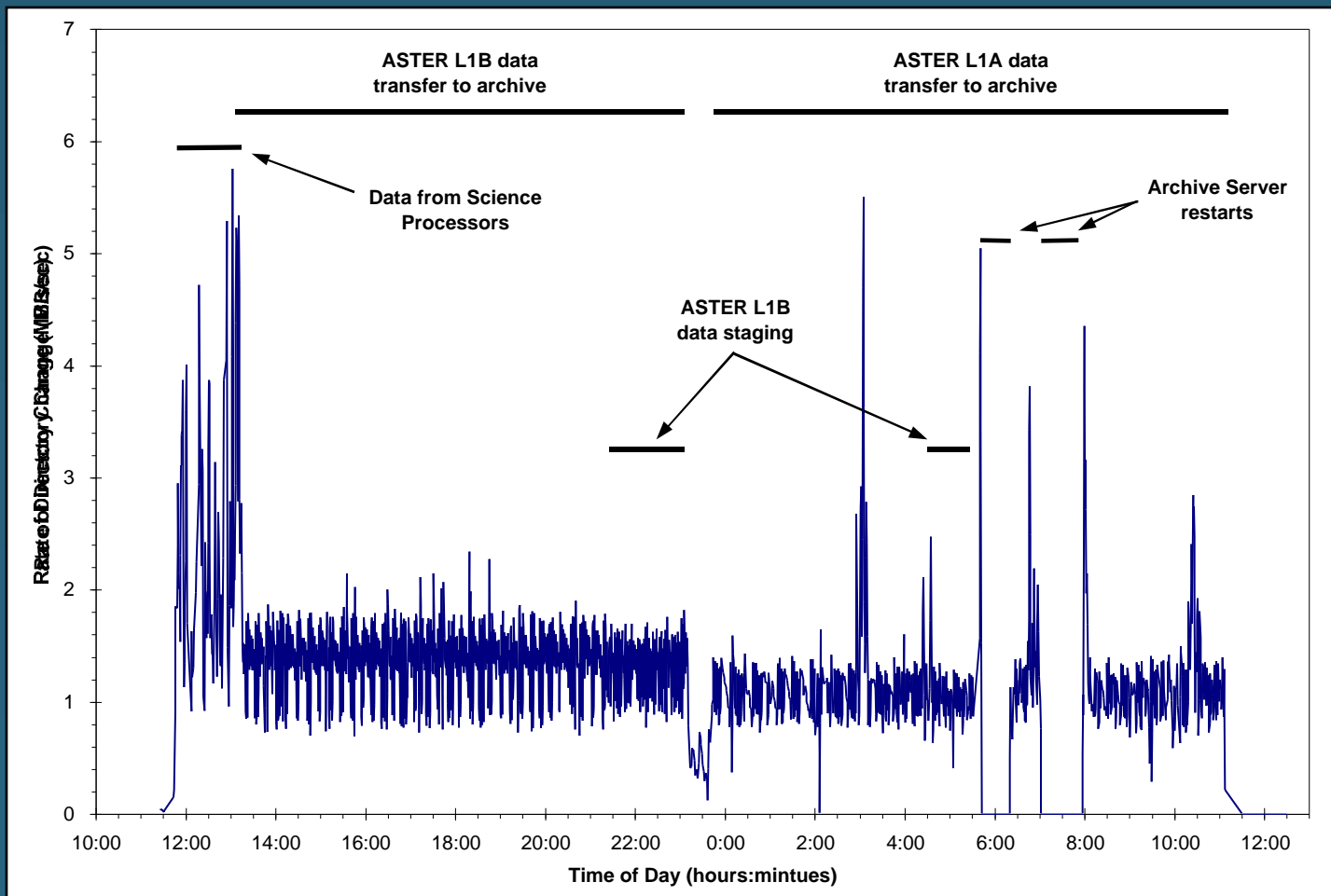
General Performance Overview for EDC

Function	Requirement (Per Day)	ETE Goal (Per Day)	ETE Results (24 Hours)	Comments
Ingest				
L70R	140 GB 275 scenes	140 GB 330 scenes	112 GB 264 scenes	Test data averages 424 MB/scene (somewhat smaller than production scenes).
ASTER L1A	85.5 GB 777 scenes	85.5 GB 777 scenes	30.7 GB 279 scenes	Ingest performance impacted by FDDI and db contention. Second tape staged to disk but not archived.
ASTER L1B	37.2 GB 310 scenes	37.2 GB 310 scenes	37.2 GB 310 scenes	Ingest performance impacted by FDDI
Production				
ASTER Routine	310 PGEs	410 PGEs	130 PGEs	Initial 100 PGEs executed without incident. Production for 310 granules limited by db contention.
ASTER On Demand	15 PGEs	15 PGEs	11 PGEs	Manual workaround for launch
Distribution				
ASTER/L7 Search	1080 Search requests	1080 Search requests	1010 Search requests	
L7 Browse	450 products	456 products	416 products	
L7 Fixed Scenes	55 GB 110 scenes	42 GB 100 scenes	39 GB 94 scenes	
ASTER Products	177 GB	55 GB	16.5 GB	Impacted by FDDI performance

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Processor Utilization has Sufficient Margin at EDC

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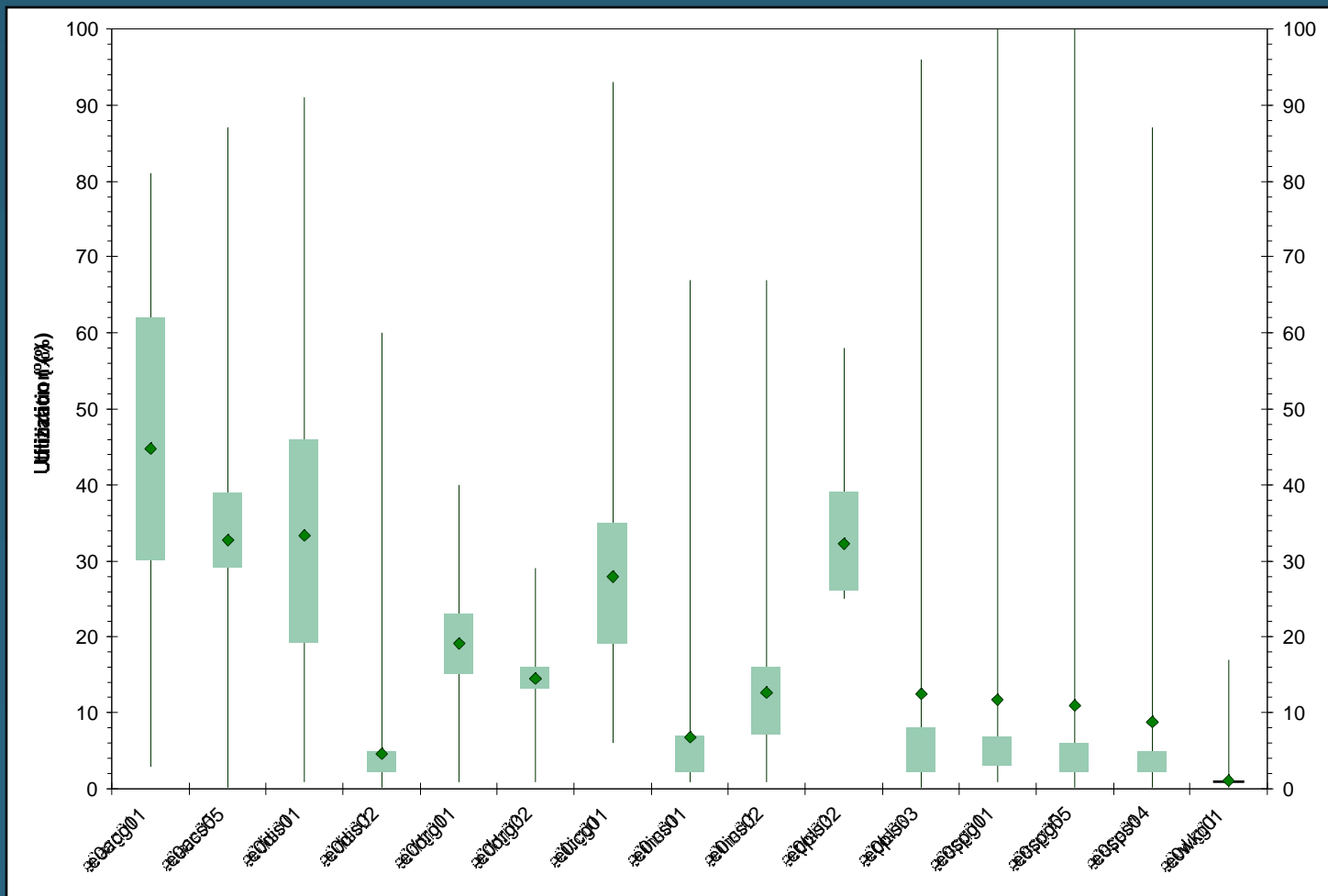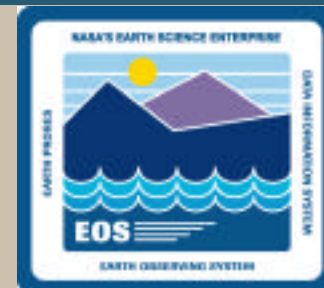
EDC Test Results

Test Title	Ticket Title	Functionality	Performance
EDC E2E Tests			
Pre-Test			
B140100210 Load SDSRV 100K Inventory	Tivp	🟩	
B140100211 Load STMGM 10 Kits	Tivp	🟩	
B140100220 Environment Setup Remove DORRAN interface	Tivp	🟩	
B140100230 Subscriptions on ASTER products	Subscription Handling	🟩	
B140100240 L7 CPF Ingest	Landsat Interface	🟩	
B140100-250 User Registration	Tivp	🟩	
B140100260 8mm Tape Stacker Setup	Tivp	🟩	
Tests			
B140100410 Performance Monitor Setup Shutdown	Tivp	🟩	🟩
B140100420 Setup wi-PCV and CalVal Svr	System Management and Monitoring	🟩	🟩
B140100430 Send COTV Data with 7 MOC	Landsat Interface	🟩	
B140100440 ASTER DEM Ingest	Concurrent Ingest	🟩	🟥 FDDI performance
B140100450 L7 LPS P1&P2 Ingest	Concurrent Ingest	🟩	🟩
	Landsat LPS Interface		🟩
B140100460 ASTER Routine Production (DST)	PGE Execution	🟩	🟨 No complete Rate with FDDI
met spec vision	🟩		
deficiency	🟨		
accepted	🟨		
failed	🟥		

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Test Title	Ticket Title	Functionality	Performance
B140100-470 L7 Search and Order	Subscription Handling	🟩	🟩
	Landsat Distribution	🟩	🟩
	Night Copy	🟩	🟩
B140100-475 L7 Search and Browse	Night Copy	🟩	🟩
B140100-478 Search Against 100K Inventory	Night Copy	🟩	🟩
B140100-480 ASTER Search and Order	Subscription Handling	🟩	Not completed FDDI 🟨
	Night Copy	🟩	
B140100-483 Manual Search Order ASTER (8mm & FTP pull)	Subscription Handling	🟩	Not completed FDDI 🟨
	Night Copy	🟩	
B140100-485 8mm Tape Order Assembly	Night Copy	🟩	🟩
B140100-490 ASTER On Demand Production	PGE Execution	Problems with ... 🟨	Not completed FDDI 🟨
B140100-500 Subscriptions on Higher Level ASTER Products	Trap	Problems with qualifiers 🟨	Not completed 🟨
B140100-510 SSI&T	PGE Execution	🟩	🟩
B140100-520 Failure Recovery	System Management and Monitoring	Tested 🟨	Demonstrated during test 🟩
Post-Test			
B140100-610 Shutdown via H-POV	System Management and Monitoring	12 saves on shutdown 🟨	Executed workaround 🟩
B140100-620 Post Test Validation	System Backup and Restore	🟩	🟩

Legend:
- 🟩 (green)
- 🟨 (yellow)
- 🟥 (red)

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Assessment By Area - EDC ETE

Functionality: Good

- All key functions were demonstrated
- Some functions became unavailable under high loads

Performance : Adequate for L-7, Poor for AM-1

- Performance for L-7 was adequate, even with AM-1 load
- Data ingest for D3 will require significant improvement
- ASTER data processing demonstrated critical DB resource overload that may require significant corrections; impacted distribution as well

Stability: Good

- All components were stable throughout ETE (4 minor server failures that quickly recovered

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Assessment By Area - EDC ETE (cont.)

Operability: Fair

- Test demonstrated that a highly knowledgeable team can operate system for a sustained period including overcoming many problems in an operational setting

- Success was highly dependent on operator detailed system knowledge, operator access to numerous development debugging tools and foresight into upcoming activities.
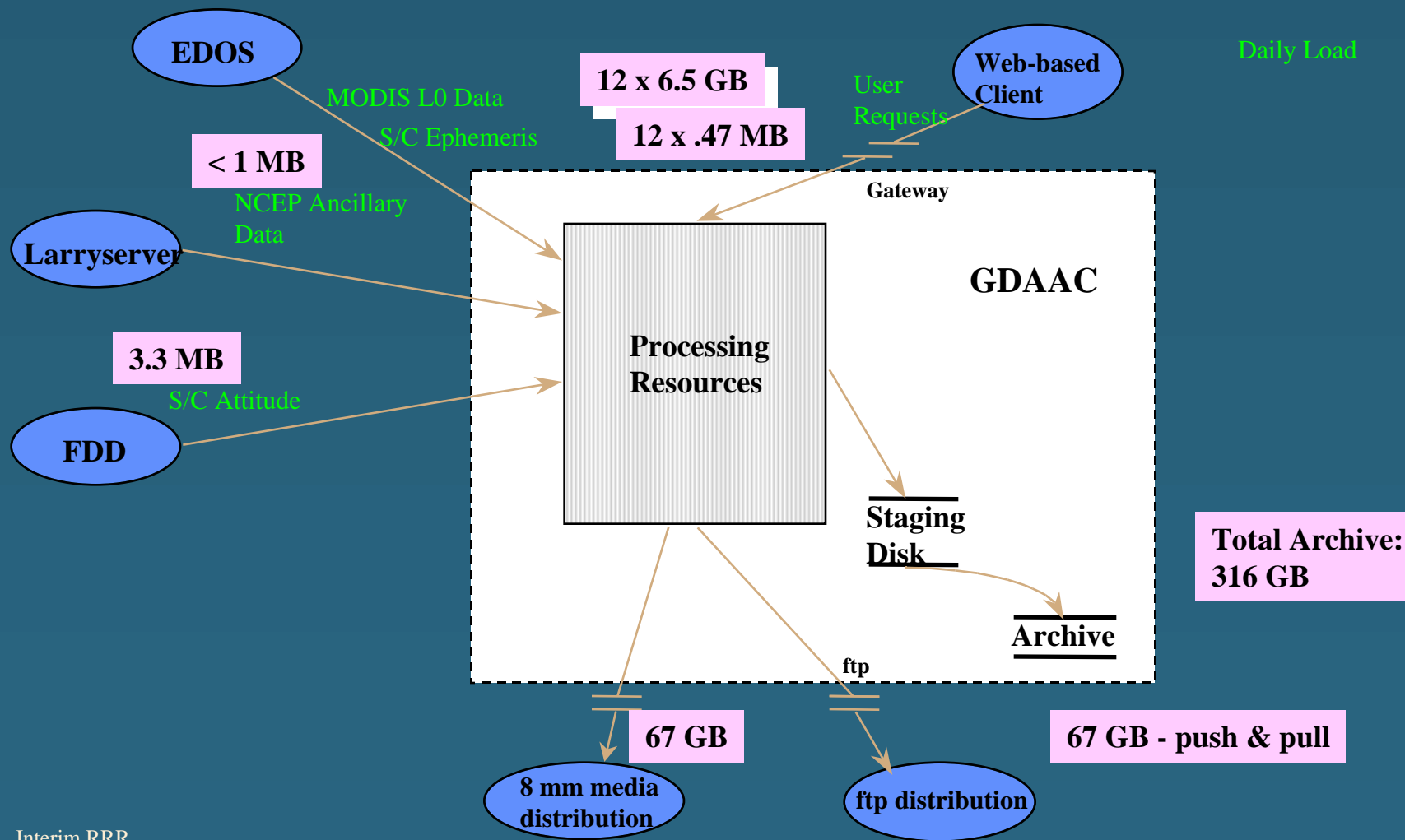
Transferability to Operations: Poor

- Many system operations details remain undocumented (i.e. test missing critical activities).

- Limited experience operating the system under heavy load has resulted in inadequate documentation of recovery procedures, many remain ad hoc and have only been tried a limited number of times.

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EDC Test Summary
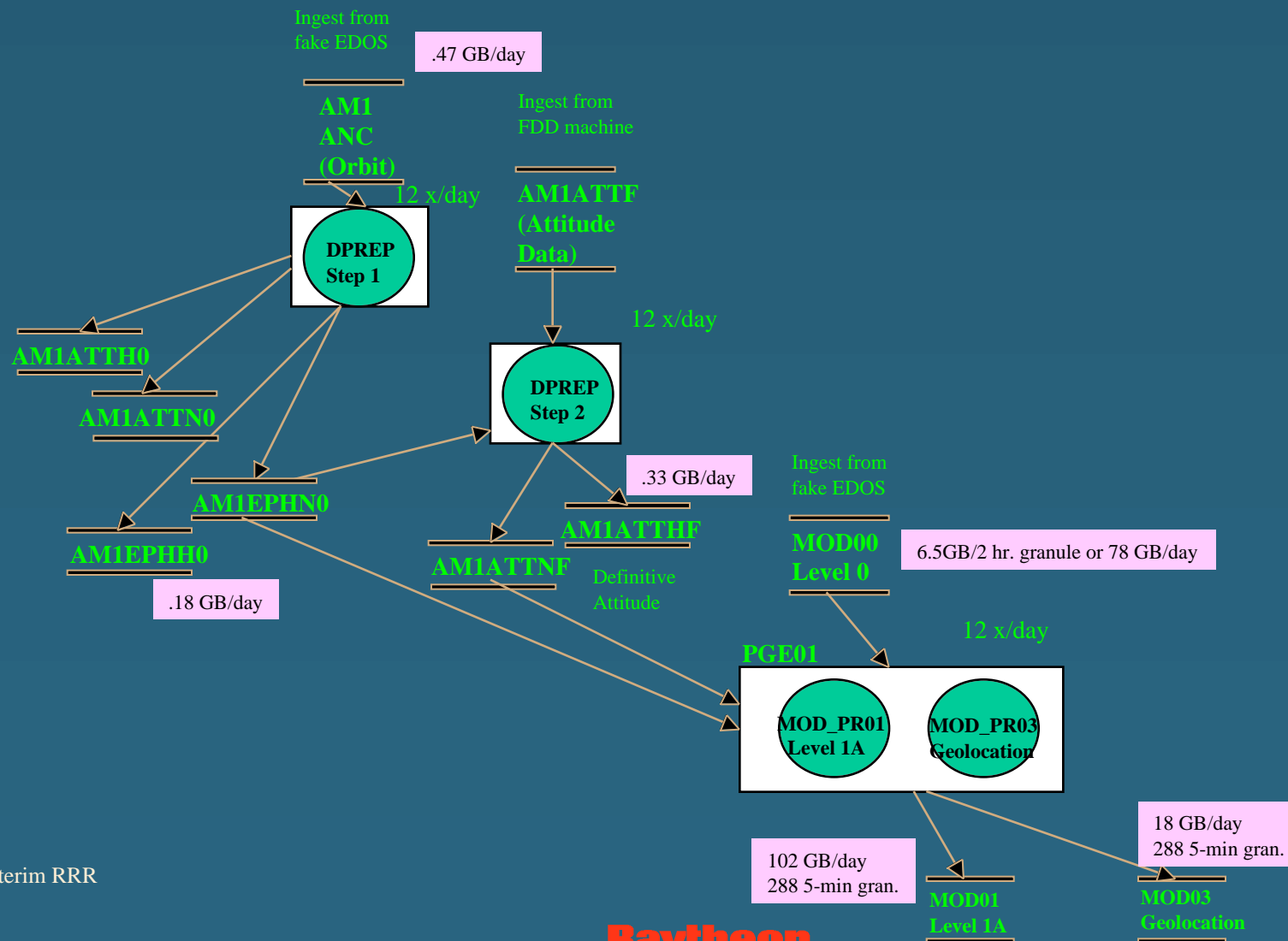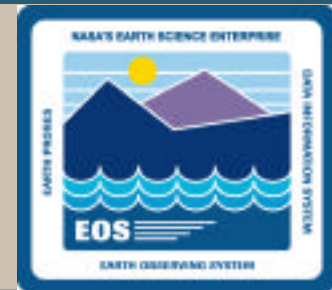
- **Demonstrated a huge leap forward in showing that ECS is on path to support upcoming launches**
- **Dedication development/test team displayed that ECS is committed to mission success**
- **Demonstrated that the system will be ready to support Landsat 7 launch through the OIVP period**
  - **system will require development support for sustained operations**

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GSFC End to End Scenario Context Diagram

EDOS

MODIS L0 Data

S/C Ephemeris

< 1 MB

NCEP Ancillary Data

Larryserver

3.3 MB

S/C Attitude

FDD

12 x 6.5 GB

12 x .47 MB

User Requests

Web-based Client

Daily Load

Gateway

GDAAC

Processing Resources

Staging Disk

Archive

Total Archive: 316 GB

ftp

67 GB

67 GB - push & pull

8 mm media distribution

ftp distribution

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GSFC End-To-End Production Scenario

Ingest from fake EDOS

.47 GB/day

AM1 ANC (Orbit)

Ingest from FDD machine

12 x/day

AM1ATTF (Attitude Data)

DPREP Step 1

AM1ATTH0

AM1ATTN0

12 x/day

DPREP Step 2

AM1EPHN0

.33 GB/day

Ingest from fake EDOS

AM1EPHH0

AM1ATTHF

MOD00 Level 0

6.5GB/2 hr. granule or 78 GB/day

.18 GB/day

AM1ATTNF

Definitive Attitude

12 x/day

PGE01

MOD_PR01 Level 1A

MOD_PR03 Geolocation

18 GB/day
288 5-min gran.

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102 GB/day
288 5-min gran.

MOD01 Level 1A

MOD03 Geolocation

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GSFC End-To-End Production Scenario (cont.)

355MB/ 5 min. granule or 102GB

61MB/ 5 min. granule or 17.6GB

MOD01
Level 1A

MOD03
Geolocation

PGE03   288/day

PGE02   288/day

MOD_PR35
Cloud Mask

MOD_PR07
Atmosl Prod.

MOD
_PRVOLC

MOD_PR02
Level 1B

MODICSRG
L3 Clear Sky
Radiances

MODVOLC
L2 Volcano

MOD02 (1km,Hkm,Qkm)
L1B Calibrated Radiances
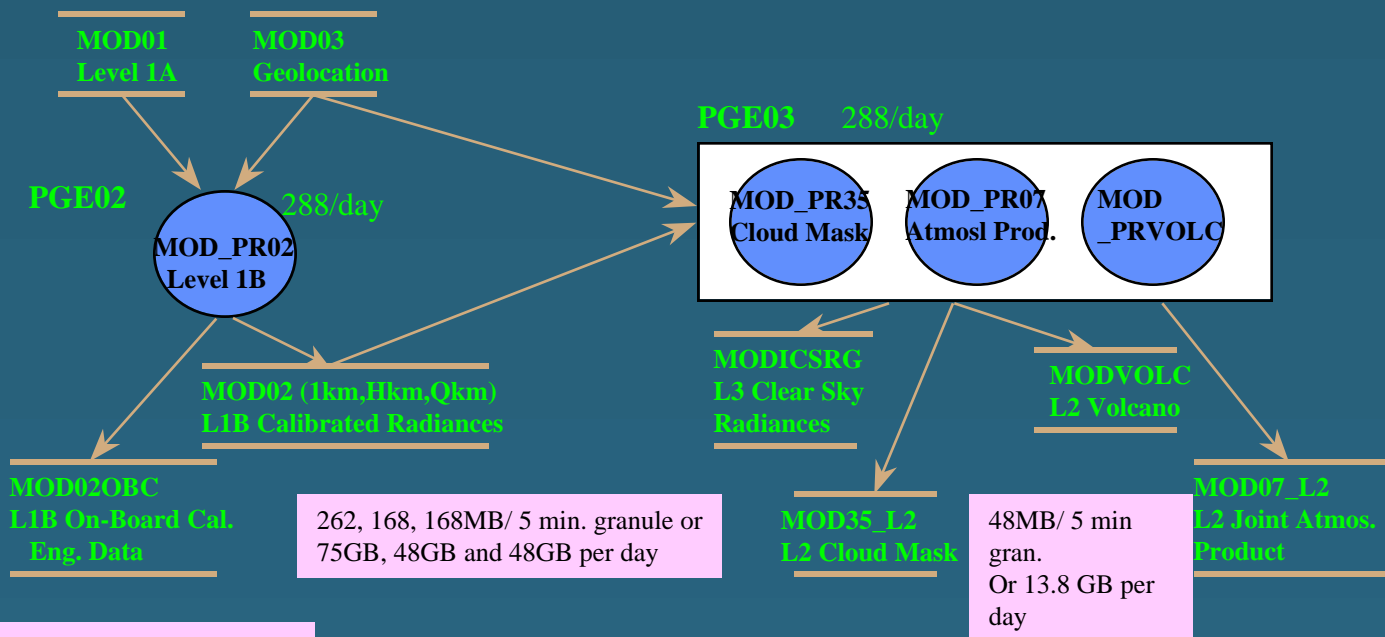
28MB/ 5 min. granule or 8 GB per day

MOD02OBC
L1B On-Board Cal.
Eng. Data

262, 168, 168MB/ 5 min. granule or 75GB, 48GB and 48GB per day

MOD35_L2
L2 Cloud Mask

48MB/ 5 min gran.
Or 13.8 GB per day

MOD07_L2
L2 Joint Atmos.
Product

57MB/ 5 min. granule or 16.4 GB

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MODIS PGE Performance vs. Technical Baseline at GSFC

PGE	# in Test	Feb 96 Tech Baseline			Oct 98 measurements		
		PGE Exec time (mins)	Total Time (mins)	# CPUs	PGE Exec time (mins)	Total Time (mins)	# CPUs
PGE01	12	85	1,020	0.708	780	9,360	6.500
PGE02	288	32	9,216	6.400	17	4,896	3.400
PGE03	288	6	1,728	1.200	31	8,880	6.200
				8.308			16.100

Note: P ticket rh84 - ETE will not show PDPS can run all DPRs for 24 hrs of processing in 24 hrs since this depends on PGE execution times.
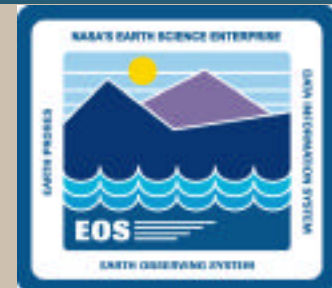
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GSFC Effective Hours of Production

TIME	PRODUCTION		COMMENTS
14:45 to 18:35	20%	0.7Hrs	NFS flooded with automounts exceeded swap space on drg01
18:35 to 01:00	0%	0.0Hrs	drg01 hung/down
01:00 to 11:00	100%	10.0Hrs	MODIS L1B production
11:00 to 16:00	20%	1.0Hrs	RO cache full/staging disk monitor cold restart hung PDPS
16:00 to 17:15	100%	1.3Hrs	MODIS PGE03 production

Total Effective Production Time = 13 Hours

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General Performance Overview for GSFC

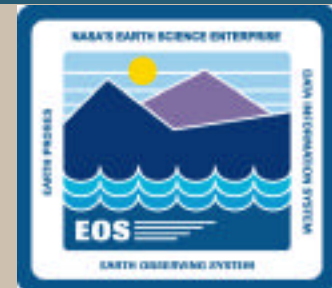| Function	Requirement (Per Day)	ETE Goal (Per Day)	ETE Results (24 Hours)	Comments
Ingest				
MODIS L0	78 GB 12 2hr granules	78 GB 12 2hr granules	156 GB 24 2hr granules	ESDT volume and backup volume groups not properly configured, doubled data to archive
ASTER Expedited	2 GB	2 GB	2 GB	
FDD	25 granules	25 granule	58 granules	See note above
Ancillary Data	22 granules	22 granules	68 granules	See note above
Production				
DPREP	12 PGEs	12 PGEs	12 PGEs	
MODIS L1A	12 PGEs	12 PGEs	3 PGEs (22%)	Production reduce by system availability
MODIS l1B	288 PGEs	288 PGEs	234 PGEs (81%)	See above
MODIS Cloud Cover (PGE 03)	288 PGEs	288 PGEs	13 PGEs (5%)	See above
Distribution				
MOD01 MOD03	6 (0.61GB) 286 (5.15 GB)	6 (0.61 GB) 286 (5.15 GB)	6 (0.061 GB) 168 (3.02 GB)	Total L1A distribution 63%
MOD021KM MOD02HKM MOD02QKM	245 (64.19 GB) 100 (16.8 GB) 288 (48.38 GB)	246 (64.19 GB) 100 (16.8 GB) 288 (48.38 GB)	20 (5.24 GB) 40 (6.72 GB) 168 (28.22 GB)	Total L1B distribution 31%

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GSFC Test Results

Test Title	Ticket Title	Functionality	Performance
GFSC E2E Tests			
Pre-Test			
B140100-210 Load SDSRV 95K Inventory	N/A	🟩	
B140100-211 Load STMGT with 10K Files	N/A	🟩	
B140200-220 Environment Setup	N/A	🟩	
B140200-230 Subscriptions on MODIS products	Distribution via subscription	🟩	
B140200-240 EDOS Pre-Test Ingest (MODIS, AM-1 ANC)	NOAA/AM-1 Ancillary Data I/F	🟩	
B140200-241 FDD Attitude Data Pre-Test Ingest	FDD Interface	🟩	
	Concurrent Ingest	🟩	
B140200-245 MODIS Pre-test Data Production	N/A	🟩	
B140200-247 Pre-Stage 8 hrs of MODIS L0 Data	N/A	🟩	
B140100-250 User Registration	N/A	🟩	
B140100-260 8mm Tape Stacker Setup	N/A	🟩	
24 Hour Test			
B140100-410 Performance Monitor Startup/Shutdown	N/A	🟩	🟩
B140100-420 Startup via HPOV and Cold Start	System Management and Monitoring	🟩	🟩
B140200-440 EDOS Ingest (MODIS, ASTER EXP, AM-1 ANC)	Concurrent Ingest	🟩	Completed 200% of goal
	EDOS Interface	🟩	🟩
B140200-450 FDD Attitude Data Ingest	FDD Interface	🟩	🟩
	Concurrent Ingest	🟩	🟩
B140200-455 Ancillary Data Ingest	Concurrent Ingest	🟩	Exceeded daily goals
	GDAAC Ancillary Data Interfaces	🟩	🟩
meets early needs of mission	🟩		
supports early needs of mission but requires additional resources to support	🟨		
does not support	🟥		

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GSFC Test Results (cont.)

Test Title	Ticket Title	Functionality	Performance
B140200-460 MODIS L1 Production	PGE Execution		Failed to complete due to system
B140200-470 MODIS Search and Order	V0 Interoperability via the V0 Web Gateway		Dependent on production
B140100-478 Search Against 95K Inventory	V0 Interoperability via the V0 Web Gateway		achieved 109% of goal
B140100-485 8mm Tape Order Assembly	V0 Interoperability via the V0 Web Gateway		Dependent on production
B140200-490 MODIS QA	NA		
B140200-495 Plan Next Day's Production	PGE Execution	Needed redlines to procedures	Failed to complete
B140200-510 SSI&T	PGE Execution	Included test for failed PGE	Ceased first test - Swap space
B140100-520 Failure Recovery	System Management and Monitoring		
Post-Test			
B140100-610 Shutdown via HPOV	System Management and Monitoring		
B140200-620 Post Test Verification	System Backup and Restore		
meets early needs of mission			
supports early needs of mission but requires additional resources to support			
does not support			

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Assessment By Area - GSFC ETE

Functionality: Good

- **All key functions were demonstrated during the ETE.**

Performance: Fair to Good

- **Excellent ingest performance, good electronic distribution, and inconclusive for 8mm distribution due to stability problems.**

- **Many configuration items need to be tuned for system to adequately support full AM-1 production.**

Stability: Poor

- **Key problems resulted in instability or stoppage during ETE**
  - **Shared library search paths contained names for non-existent directories causing NFS saturation; drg01 locked up due to NFS saturation and had to be rebooted; STMGT RO disk cache became full causing all staging and distribution requests to halt.**

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Operability: Fair

- Test demonstrated that a highly knowledgeable team can operate system for a sustained period including overcoming problems in an operational setting.

- Success was highly dependent on operator detailed system knowledge, operator access to knowledge of numerous development debugging tools and foresight into upcoming system activities.

Transition to Operations: Poor

- Limited experience operating system under heavy loads resulted in inadequate documentation of recovery procedures.

- Numerous configuration issues identified during the ETE need to be corrected.

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GSFC Test Summary

- **GSFC End-to-End test demonstrated that ECS provides the functional capabilities and throughput required to support MODIS L1 production. However, several system problems limited the duration of effective system operation and prevented full daily production and distribution volumes from being attained.**

- **With correction of these problems, the system will be ready to support AM-1 launch & early operations.**

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Summary

- **All key functions were demonstrated during the ETEs**

  - Some functions became unavailable under high loads

- **Performance was adequate for L-7, Poor but promising for AM-1**

- **ECS is committed to the transfer of system operations and troubleshooting knowledge to the DAACs**

- **ECS is working with the DAACs to identify other performance test opportunities (e.g. EGS-10, rerun LST 3b, etc.)**

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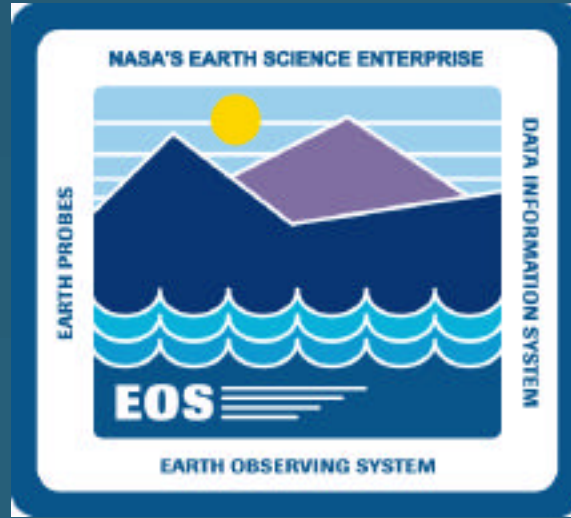
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Assessment of Test Results

Steve Fox

Raytheon Systems Company

Additional Testing Has Been Performed

**Additional testing has been performed since AT's were completed**

- **End-to-End tests**
- **DAAC tests**
- **Landsat Project tests**

**This assessment considers input from these additional sources**

Key

- **Feature Group (FG) - a set of related features**
- **FC, EC, PC -- Functional Component, Error Conditions, Performance Criteria**
- **Verification Status**
    - **V = Verified by ECS**
    - **W = Working -- demonstrated to ESDIS; not completely verified by ECS Test Program**
    - **NV = Not Verified**
    - **NT = Not Tested**
    - **NA = Not Applicable -- no FG criteria to test for this FC, EC, or PC area**
    - **VN = Verified Near-term (performance only)**
    - **I = Inadequate (performance only)**
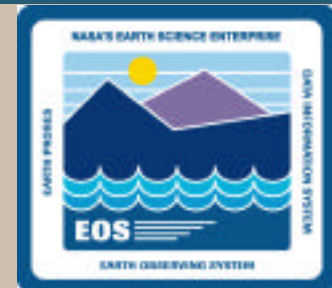
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Function Category	Feature Group Title	FG Priority	FC Status	EC Status	PC Status G/E only	Status Comments	NCRs
Archive	Ingest Data Cataloging and Archive	1	W	V	NA	2/11/99, FCs demonstrated in End-to-End tests	2H, 9M, 12L
Archive	Subscription Handling	1	W	W	NV	2/11/99, Not Tested by ECS, demonstrated in EtE tests	1H, 3M, 11L
Archive	New Data Type Installations	1	W	W	NA	2/11/99, Manual process is working	1H, 2L
Archive	Update QA Metadata	2	V	V	V		1L
Archive	Handle archive tape failures	4	W	NA	NA	Not verified at all sites	1M
Distribution	Data Distribution and Display	2	W	W	NA	2/11/99, Production History is not verified; Concurrent FTP to same location not tested.	2M, 14L
Distribution	Scheduling and management of media devices	1	W	W	NA	2/11/99, FCs demo'd in End-to-End tests; need to test maintenance	_
Distribution	Distribution Management	1	W	W	NA	2/11/99, 8mm tape device off-line not tested; some FCs verified in End-to-Ends at GDAAC	2H, 3L
Distribution	Distribution garbage collection	3	NV	W	NA	ftp Pull monitor	1H
Distribution	Landsat MOC Interface	1	V	W	V		2L
Distribution	ASTER Expedited & E-mail Interfaces	1	W	W	NT	2/22/99, Tested in ICTs	_
Distribution	Landsat Distribution	3	W	W	VN	2/17/99, works in LST3b	7H, 8M, 3L
Distribution	Landsat Billing Interface	3	W	W	NA	2/17/99, works in LST3b, not tested by ECS	1H
Distribution	SCF Interface	2	W	W	NA	2/18/99, Receive update via QA monitor/email Not Tested	_
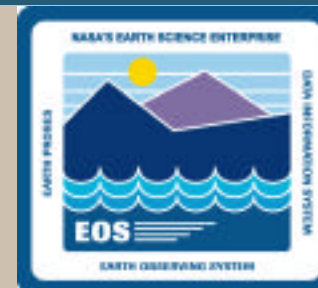
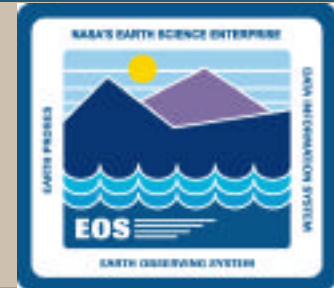| Function Category	Feature Group Title	FG Priority	FC Status	EC Status	PC Status G/E only	Status Comments	NCRs
Ingest	FDD Interface	1	W	W	V		_
Ingest	FOS Interface	1	NT	NT	NT	Working interface with EMOS. MISR had problems with DAS	_
Ingest	Concurrent Ingest	1	W	W	VN	FC - New FC to test in 4PY; EC - INS detect full staging disk Not Verified - NCR 19071	2L
Ingest	Data Versioning	1	W	W	NA	Data type descriptor file and dll for existing data types not verified, but working in L-7 test	_
Ingest	Landsat LPS Interface	1	W	W	VN	2/11/99, working in Landsat-7 project tests	1H, 1M, 1L
Ingest	Landsat IAS Interface	1	W	W	V	2/11/99, working in Landsat-7 project tests	1M
Ingest	EDOS Interface	1	W	NV	V	Cross-DAAC Work around in 4PY is Open; no impact for Landsat; functionality worked at LaRC	2H, 2M, 12L
Ingest	ASTER D3 Interface	1	V	W	I	2/11/99, working the speed problem	2H, 1M, 3L
Ingest	NOAA Ancillary Data Interfaces	1	V	W	NT	2/11/99, some ECs may not be testable	1L
Ingest	GDAAC Ancillary Data Interfaces	1	W	W	V	2/11/99, "Receive PDR" covered in ICTs; SSM/I data type not verified.	1H, 1M
Ingest	SAGE III L0 Interface	1	NT	NT	NT	2/22/99, Being delivered early in 4PY.	_
Management	Metadata Works	1	W	NA	NA	In routine use, not tested in Drop 4PX	1L
Management	System Backup and Restore	1	W	W	VN	Not completely tested	1H, 1M
Management	System Management and Monitoring	1	W	W	NV	Not verified at all sites	4M, 29L

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Function Category	Feature Group Title	FG Priority	FC Status	EC Status	PC Status G/E only	Status Comments	NCRs
Management	Trouble Ticketing	1	W	W	NA		2H
Management	Failure Recovery	1	W	NA	NA	2/11/99, some functionality not verified such as rebinding, cold restart of INGST and STMGT, recovery of PLS subscription mgr, and SDRV failure recovery during backup/restore; orders may be lost until the SDSRV persistent asynchronous acquires is added in	2H, 10M, 13L
Management	DCE Management	1	NV	W	NA	Unable to access DCE security manager	_
Management	Baseline and Inventory Management	1	W	W	NA	2/11/99, Three reports not working: work order status, use of consummables, and changing PM schedule are NV, others verified	7L
Management	System Installation	1	W	NA	NA	In routine use, not tested in Drop 4PX	1L
Management	Monitor Security	3	NV	NA	NA	Problem with logging unsuccessful DCE logins	4L
Production	FDD Attitude Preprocessing	1	W	W	NA	2/11/99, one FC to test in 4PY, demo'd in EtEs; DPREP workaround issue	_
Production	SDP Toolkit Availability	1	W	NA	NA	In routine use, not tested in Drop 4PX	1M, 3L
Production	Failed PGE Executions	2	W	NA	NA	2/11/99, Not tested by ECS; FCs demonstrated in End-to-Ends	5L
Production	AM-1 Ancillary Data Preprocessing	2	W	W	NA		2H, 1M, 1L
Production	Detect Runaway PGEs	4	NT	V	NA		_
Production	Resource Reservations	2	W	V	NA	Not tested at all sites	1H, 3L

Interim RRR

Function Category	Feature Group Title	FG Priority	FC Status	EC Status	PC Status G/E only	Status Comments	NCRs
Production	PGE Execution	1	W	W	NV	2/11/99, Ad Hoc Reprocessing working at EDC; all functionality demo'd in EtE except DPR priority modification and MISR	5H, 9M, 46L
Production	SS&T	2	W	NA	NA	In routine use, not tested in Drop 4PX	1M, 11L
Search and Order	Search and Order	1	W	NV	NT	FCs not verified at LaRC	2H, 5M, 9L
Search and Order	Handle Multiple Users, Orders	3	V	NT	V	2/11/99, functionality verified in the GDAAC End-to-End tests	1H, 1L
Search and Order	Manage Data Dictionary	3	W	NV	NA	User I/F portion is not necessary	3L
Search and Order	User Registration	1	W	W	NA		3M, 4L
Search and Order	V0 Interoperability via the V0 Web Gateway	1	W	NT	V	2/11/99, FC working at EDC in LST3b; PC tested with B0SOT only	–
Search and Order	ASTER DAR Support	1	W	NT	NA	2/11/99, ICTs verified basic interfaces	–
Search and Order	Advertisements	3	NV	NV	NA	2/11/99, User I/F portion is not necessary for launch ready system	1M, 3L

Interim RRR

Feature Group Summary by Area

Function Category	# of FGs Applicable to FC Tests	# FGs Status Working (FC)	% Working (FC)	# of FGs Applicable to EC Tests	# FGs Status Working (EC)	% Working (EC)	# of FGs Applicable to PC Tests	# FGs Status Working (PC)	% Working (PC)
Ingest	11	9	82%	11	8	73%	10	6	60%
Archive	5	5	100%	4	4	100%	2	1	50%
Production	8	7	88%	5	5	100%	1	0	0%
Search and Order	7	6	86%	7	1	14%	3	2	67%
Distribution	9	8	89%	9	9	100%	3	2	67%
System Management	9	7	78%	5	5	100%	2	1	50%
Total	49	42	86%	41	32	78%	21	12	57%

Performance reflects EDC and GSFC only

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